

REMARKS/ARGUMENTS

Claims 1-31 are pending in the subject patent application. Claims 32-39 have been withdrawn, in response to a restriction requirement. Claims 1, 16 and 17 have been amended.

In the August 19, 2005 Office Action, Claims 1-9, 11-13, 16-25 and 27-29 were rejected under 35 U.S.C. § 102(b) for allegedly being anticipated by U.S. Patent No. 6,369,771 to Chiang et al. (hereinafter referred to as “Chiang et al.”). Claims 1-9, 11, 13, 16-25 and 27-29 were rejected for allegedly being anticipated by U.S. Patent No. 6,160,514 to Judd (hereinafter referred to as “Judd”). Claims 10, 14, 15, 26, 30 and 31 were objected to for being dependent on rejected base claims, but were indicated as being allowable if rewritten in independent form including all of the limitations of the base claims and any intervening claims. Applicant respectfully requests consideration of the claims in view of the remarks provided below.

Final Office Action Premature

Applicant respectfully believes that designating the current Office Action as “final” is premature, and requests that the finality of the current Office Action be withdrawn.

M.P.E.P. § 707.07(f) directs that, if a rejection is repeated, the Examiner must “*take note of the applicant’s argument and answer the substance of it.*” Here, the only consideration given to the arguments presented by Applicant in the previous July 5, 2005 Amendment/Response was a comment that Applicant’s arguments concerning the “reactive circuit element” in independent Claims 1 and 16 were not persuasive. No

acknowledgment or response to any of the many additional arguments provided by Applicant traversing the rejections based on Judd were made in the present Office Action. While the same claims have also been rejected based on another reference, the fact remains that arguments opposing the rejection of the claims based on Judd have not been addressed or even acknowledged, even though the rejections based on Judd have been repeated. The failure to either note or respond to Applicant's arguments is not in accordance with M.P.E.P. § 707.07(f). Applicant believes, therefore, that the finality of the present Office Action is premature, and requests that the finality of the Office Action be withdrawn.

35 U.S.C. § 102(b) Rejections -- Chiang et al.

On pages 3-4 of the August 19, 2005 Office Action, Claims 1-9, 11-13, 16-25 and 27-29 were rejected for allegedly being anticipated by Chiang et al. For the following reasons, Applicant respectfully disagrees.

Chiang et al. discloses an antenna array having a plurality of antenna elements 22. Each antenna element 22 includes a substrate 140, upon which a conductive planar element 142 is printed on one side 144 in an upper region of the substrate 140. A conductive planar ground patch 146 is printed on the opposite side 148 in a lower region of the substrate 140. A feed strip 150 extends from the bottom of the conductive planar element and connects to a transmission line 152 at the bottom feed point 153 located at the bottom edge 155 of the substrate 140. The feed strip 150 includes an upward extension 151 having notches 154. The conductive planar element 142 and the transmission line 152 are electrically isolated from a ground plane 20. The transmission

line 152 is connected to a delay line 58, which in turn is connected to a lumped or variable impedance element 57 and a switch 59.

Comparing Chiang et al. to independent Claim 1 of the present application reveals at least the following important distinctions, which Applicant respectfully believes demonstrate that independent Claim 1 is allowable over Chiang et al.

First, despite what is asserted in the Office Action, Chiang et al. does not disclose a “multi-band antenna system”. While it is true that Chiang et al. teaches that alternative antenna designs for different applications having different frequency bands can be made, there is absolutely no teaching of a single antenna structure that is a *multi-band* antenna system.

Second, Chiang et al. fails to disclose a transmission means having a “loop section”. Despite this, in the Office Action it is asserted that the transmission line 152 has a “loop section”. Applicant has carefully reviewed Chiang et al. and has found no description or illustration of the transmission line 152 having a “loop section.”

Third, Chiang et al. provides no teaching of a “reactive circuit element” and a “loop section of [a] transmission means” that are “configured to operate as a trap....” Despite this, in the Office Action it is asserted that column 5, lines 36-39 teaches such subject matter. Applicant respectfully disagrees. Column 5, lines 36-39 of Chiang et al. merely describes how a delay line 58, a variable or lumped impedance element 57, and a switch 59 are connected to a respective passive antenna element 22-1, 22-2, 22-3,...,22-N. In no way does that description teach how a reactive circuit element and a loop section of a transmission means are “configured to operate as a trap for received signals

having frequencies within a first frequency band”, as independent Claim 1 of the present application recites.

For at least the foregoing reasons, Chiang et al. fails to teach each and every element set forth in independent Claim 1 of the present application. Accordingly, Applicant requests that the rejection of independent Claim 1, as allegedly being anticipated by Chiang et al., be withdrawn.

Similar reasons as to why independent Claim 1 is not anticipated by Chiang et al. are applicable to the rejection of independent Claim 16. Specifically, Chiang et al. does not disclose a “multi-band antenna system”; fails to disclose a transmission means having a “loop section”; and fails to teach a reactive circuit element and a loop section of a transmission means “configured to operate as a trap for received signals....” For at least these reasons, Chiang et al. fails to teach each and every element set forth in independent Claim 16 of the present application. Accordingly, Applicant requests that the rejection of independent Claim 16, as allegedly being anticipated by Chiang et al., be withdrawn.

Claims 2-9, 11-13, 17-25 and 27-29 were also rejected for allegedly being anticipated by Chiang et al. However, since these claims all depend from either independent Claim 1 or independent Claim 16, which are not anticipated by Chiang et al. for at least the reasons set forth above, they too should be in a condition for allowance as depending from allowable base claims. There are additional reasons as to why some or all of these dependent Claims 2-9, 11-13, 17-25 and 27-29 are distinguishable from Chiang et al. Some of these additional reasons are provided below.

Claim 2 recites how the “dipole” of the “multi-band antenna system of Claim 1” is “configured to receive signals having frequencies within a second frequency band.”

Chiang et al. fails to teach such subject matter. Despite this, in the Office Action it is asserted that “Chiang et al. discloses the dipole can be used in PCS or CDMA.” Applicant respectfully disagrees. While Chiang et al. does explain that the dipole antenna structure described therein may be designed so that it is operable in either a PCS or CDMA wireless application, there is no teaching that a given antenna structure design has multi-band capabilities. In other words, Chiang et al. fails to disclose an antenna system that by itself is capable of receiving signals from both a first frequency band and a second frequency band.

Claim 3 depends from dependent Claim 2, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 2 are allowable over Chiang et al. Further, Chiang et al. fails to disclose a “multi-band antenna system” where the “first frequency band corresponds to the CDMA 0.86 GHz band” and the “second frequency band corresponds to the PCS 1.92 GHz band”, as specifically recited in Claim 3. As explained in the previous paragraph, while Chiang et al. does explain that the antenna structure therein may be designed so that it operates according to *either* the CDMA *or* the PCS frequency band, there is no teaching that a given, single antenna system is capable of receiving signals within both the CDMA and PCS bands. In other words, Chiang et al. does not disclose a multi-band antenna system.

Claim 4 recites how a “ground plane of a printed circuit board of the PC Card wireless modem and/or a conductive housing of the PC Card wireless modem functions as a counterpoise for the antenna apparatus.” While Chiang et al. does describe an antenna system having a ground plane on a printed circuit board, there is no teaching of a

ground plane of “a printed circuit board of [a] PC Card wireless modem” or a “conductive housing of the PC Card wireless modem”. Moreover, Chiang et al. fails to teach that either a ground plane of “a printed circuit board of [a] PC Card wireless modem” or a “conductive housing of the PC Card wireless modem” functions as a counterpoise.

Claim 5 depends from dependent Claim 4, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 4 are allowable over Chiang et al. Further, Claim 5 recites how the “combined lengths of a pole of the dipole antenna and a portion of the transmission means operate as a monopole antenna for received signals having frequencies within the first frequency band.” Chiang et al. does not teach such subject matter. Despite this, in the Office Action it is asserted that Figure 5 and column 6, lines 15-28 of Chiang et al. do teach subject matter. Applicant respectfully disagrees. Figure 5 of Chiang et al. illustrates how the antenna array is capable of forming a beam with a peak beam strength rising no more than about 10° above the horizon. Column 6, lines 15-28 describe material and dimensional characteristics of the substrate 140 for the antenna element 22. The passage also describes how the conductive planar element 142, the feed strip 150, and the conductive planar ground patch 146 are produced with printed circuit board techniques by depositing a respective layer to each of the sides 144 and 148 of the substrate 140. Accordingly, it is seen that in no way do Figure 5 or column 6, lines 15-28 teach “combined lengths of a pole of [a] dipole antenna and a portion of [a] transmission means operate as a monopole antenna for received signals having frequencies within [a] first frequency band”, as Claim 5 of the present application recites.

Claim 6 recites how the “multi-band antenna system of Claim 1” further comprises “a matching circuit coupled between first and second poles of the dipole antenna.” Chiang et al. does not teach such subject matter. Despite this, in the Office Action it is asserted that Figure 3 of Chiang et al. teaches such subject matter. No indication is provided in the Office Action as to what component(s) in Figure 3 corresponds to the “matching circuit”. Should the Examiner disagree that Chiang et al. fails to disclose such subject matter, Applicant respectfully requests that the Examiner be more specific as to what component(s) in Figure 3 correspond to the “matching circuit” claimed in Claim 6 of the present application.

Claim 7 depends from dependent Claim 6, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 6 are allowable over Chiang et al. Further, Claim 7 recites that the “matching circuit” in Claim 6 is “configured to operate as a balun.” Such subject matter is not taught by Chiang et al. Despite this, in the Office Action it is asserted that Figure 3 of Chiang et al. does teach such subject matter, and similar to the rejection of Claim 6, no specificity is provided as to what component(s) in Figure 3 of Chiang et al. corresponds to the “balun” recited in Claim 7. Should the Examiner disagree that Chiang et al. fails to disclose such subject matter, Applicant respectfully requests that the Examiner be more specific as to what component(s) in Figure 3 of Chiang et al. correspond to the “balun” recited in Claim 7 of the present application.

Claim 8 depends from dependent Claim 6, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 6 are allowable over Chiang et al. Claim 8 also recites how the “matching

circuit, the dipole, and a portion of the transmission means are formed on a first printed circuit board". As explained above, in response to the rejections of Claims 6 and 7, Chiang et al. does not disclose a "matching circuit". Chiang et al. also fails to teach a "matching circuit" formed on a printed circuit board.

Claim 9 recites how the "reactive circuit element" is formed on a printed circuit board." In the Office Action, reference to Figure 3 of Chiang et al. is made to support the rejection. Ostensibly, it is the "impedance elements 57", which the Examiner has previously designated as corresponding to the reactive circuit element in Claim 1. However, the impedance elements 57 are not shown to be formed on the substrate 140, which is the only structure in Figure 3 that is described as being a printed circuit board.

Claim 17 recites how the "combined lengths of a pole of the dipole antenna, and a portion of the transmission means form a whip antenna capable of receiving signals having frequencies within [a] first frequency band." In the Office Action it is asserted that Chiang et al. discloses such subject matter. Applicant respectfully disagrees. Chiang et al. does not, as is asserted in the Office Action, disclose an antenna system that may be configured to receive signals in multiple bands. As explained above (see response to the rejection of Claim 3), while Chiang et al. does explain that the antenna structure therein may be designed so that it operates according to *either* the CDMA or the PCS frequency band, there is no teaching that a given, single antenna system is capable of receiving signals within both the CDMA and PCS bands. In other words, Chiang et al. does not disclose a multi-band antenna system. Chiang et al. also fails to describe how "combined lengths of a pole of [a] dipole antenna, and a portion of the transmission means form a whip antenna", and there is nothing provided in the Office Action indicating that it does.

Claim 18 recites how the “dipole” of the “multi-band antenna system of Claim 16” is “configured to receive signals having frequencies within a second frequency band.” Despite what is asserted in the Office Action, Chiang et al. does not teach how its antennas may be configured to receive signals within a second frequency band. As explained in the previous paragraph, while Chiang et al. does explain that the antenna structure therein may be designed so that it operates according to *either* the CDMA or the PCS frequency band, there is no teaching that a given, single antenna system is capable of receiving signals within both the CDMA and PCS bands. In other words, Chiang et al. does not disclose a multi-band antenna system that is capable of receiving signals having frequencies within a first frequency band and a second frequency band.

Claim 19 depends from dependent Claim 18, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 18 are allowable over Chiang et al. Further, Chiang et al. fails to disclose a “multi-band antenna system” where the “first frequency band corresponds to the CDMA 0.86 GHz band” and the “second frequency band corresponds to the PCS 1.92 GHz band”, as specifically recited in Claim 19. As explained in the previous paragraph, while Chiang et al. does disclose an antenna structure that may be designed so that it operates according to *either* the CDMA or PCS frequency band, there is no teaching that a given, single antenna system is capable of receiving signals within both the CDMA and PCS bands.

Claim 21 depends from dependent Claim 20, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 20 are allowable over Chiang et al. Further, Claim 21 recites how a

“ground plane of a printed circuit board of the PC Card wireless modem and/or a conductive housing of the PC Card wireless modem functions as a counterpoise for the antenna apparatus.” While Chiang et al. does describe an antenna system having a ground plane on a printed circuit board, there is no teaching of a ground plane of “a printed circuit board of [a] PC Card wireless modem” or a “conductive housing of the PC Card wireless modem”. Moreover, Chiang et al. fails to teach that either a ground plane of “a printed circuit board of [a] PC Card wireless modem” or a “conductive housing of the PC Card wireless modem” functions as a counterpoise.

Claim 22 recites how the “multi-band antenna system of Claim 16” further comprises “a matching circuit coupled between first and second poles of the dipole antenna.” In the Office Action, it is asserted that lines Chiang et al. teaches such subject matter. Applicant respectfully disagrees. No indication is provided in the Office Action as to what component(s) in Figure 3 corresponds to the “matching circuit”. Should the Examiner disagree that Chiang et al. fails to disclose such subject matter, Applicant respectfully requests that the Examiner be more specific as to what component(s) in Figure 3 correspond to the “matching circuit” claimed in Claim 22 of the present application.

Claim 23 depends from dependent Claim 22, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 22 are allowable over Chiang et al. Further, Claim 23 recites how the matching circuit recited in Claim 22 is “configured to operate as a balun”. Such subject matter is not taught by Chiang et al. Despite this, in the Office Action it is asserted that Figure 3 of Chiang et al. does teach such subject matter, and similar to the rejection of

Claim 22 no specificity is provided as to what component(s) in Figure 3 of Chiang et al. corresponds to the “balun” recited in Claim 23. Should the Examiner disagree that Chiang et al. fails to disclose such subject matter, Applicant respectfully requests that the Examiner be more specific as to what component(s) in Figure 3 of Chiang et al. correspond to the “balun” recited in Claim 23 of the present application.

Claim 24 depends from dependent Claim 22, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 22 are allowable over Chiang et al. Claim 24 also recites how the “matching circuit, the dipole, and a portion of the transmission means are formed on a first printed circuit board”. As explained above, in response to the rejections of Claims 22 and 23, Chiang et al. does not disclose a “matching circuit”. Chiang et al. also fails to teach a “matching circuit” formed on a printed circuit board.

Claim 25 recites how the “reactive circuit element” is formed on a printed circuit board.” In the Office Action, reference to Figure 3 of Chiang et al. is made to support the rejection. Ostensibly, it is the “impedance elements 57”, which the Examiner has previously designated as corresponding to the reactive circuit element of Claim 16. However, the impedance elements 57 are not shown to be formed on the substrate 140, which is the only structure in Figure 3 that is described as being a printed circuit board.

35 U.S.C. § 102(b) Rejections -- Judd

On pages 4-5 of the Office Action, Claims 1-9, 11-13, 16-25 and 27-29 were rejected for allegedly being anticipated by Chiang et al. These same rejections were presented in the April 5, 2005 Office Action, and were responded to in a July 5, 2005

Amendment/Response. The response to the rejections, which Applicant believes clearly shows Claims 1-9, 11-13, 16-25 and 27-29 are allowable over Judd. Applicant requests that the rejections be withdrawn.

Judd discloses an L-shaped indoor antenna system having a first pair of opposed planar support surfaces and a second support member having a second pair of opposed planar support surfaces. The first and second support members are coupled along a common edge and oriented such that the first pair of planar support surfaces is substantially orthogonal to the second pair of planar support surfaces. A plurality of antennas is mounted to each of the support surfaces of the first and second pairs of supports surfaces. According to Judd, such an antenna system provides omni-directional coverage, thereby avoiding the need to point or orient the antenna to achieve optimal reception. The “L-shape” of the antenna system also allows the antenna system to be installed in a corner of a room.

Comparing Judd to independent Claim 1 of the present application reveals at least the following important distinctions.

First, Judd does not disclose a multi-band antenna system that includes a “reactive circuit element coupled between a second end of [a] transmission means and a PC Card wireless modem”, as independent Claim 1 of the present invention recites. Despite what is asserted in the Office Action, the summation/splitting mechanism 72 and frequency diplexer module 95, whether considered individually or in combination, do not correspond to the “reactive circuit element” recited in independent Claim 1 of the present application. Judd does not teach that the summation/splitting mechanism 72 and frequency diplexer module 95 comprise a “reactive circuit”. Because there is no teaching

that the summation/splitting mechanism 72 and frequency diplexer module 95 comprise a reactive circuit the § 102 rejection of independent Claim 1 cannot be properly maintained.

Second, the “modem 96” described in column 3, lines 58-64 of Judd cannot be properly characterized as corresponding to the “PC Card wireless mode” term recited in Claim 1. A PC Card wireless modem is a network interface apparatus that allows a computing device (e.g. a laptop computer or other device) to gain wireless access to a wireless communications network (e.g. the PCS or CDMA communications networks). The “modem 96” in Judd does not function in such a manner, and there is no teaching or suggestion that the “modem 96” may be employed as a network interface apparatus to gain access to a wireless communications network. The “modem 96” has nothing to do with assisting a computing device gain access to a wireless communications network. The “modem 96” in Judd only operates to select which “antenna face” (26a and 28a of FIG. 4 or 26b or 28b of FIG. 5) of an L-shaped indoor antenna system has the maximum RF power. Such an operation is totally irrelevant in the context of the present invention. Therefore, despite what is asserted in the Office Action, the “modem 96” cannot be properly characterized as a “PC Card wireless modem”.

Third, Judd fails to disclose how the “reactive circuit element and a loop section of [a] transmission means are configured to operate as a trap for received signals having frequencies within a first frequency band,” as independent Claim 1 of the present application recites. Despite what is asserted in the Office Action, Lines 49-68 of column 3 in Judd do not disclose this subject matter. Column 3, lines 49-68 describe how the splitting/summing device 72 (72a) has the effect of reducing the directional gain of the L-

shaped omni-directional antenna system, and how this reduction in directional gain can be overcome by employing a 4:1 RF switch 92 controlled by the modem 96. The modem 96 is configured to control the 4:1 RF switch 92 so that the antenna face (26a and 28a of FIG. 4 or 26b or 28b of FIG. 5) having the maximum RF power is selected. This operation has nothing to do with a “trap”, which has a variable impedance depending on the frequency of the received signals. Moreover, there is no discussion of a transmission means having a “loop section” in Judd. Accordingly, despite what is asserted in the Office Action, not only does Judd fail to teach a “reactive circuit element”, Judd also fails to teach how a “reactive circuit element and a loop section of the transmission means are configured to operate as a trap for received signals having frequencies within a first frequency band.”

For at least the foregoing reasons, Applicant respectfully believes that Judd fails to teach each and every element set forth in independent Claim 1. Because it does not, the § 102 rejection of independent Claim 1 cannot be properly maintained, and Applicant requests that it be withdrawn.

Similar reasons as to why independent Claim 1 is not anticipated by Judd are applicable to the rejection of independent Claim 16. For example, independent Claim 16 includes a “reactive circuit element”, which, as discussed above in response to the rejection of independent Claim 1, is not taught by Judd. Judd also fails to disclose a transmission means having a “loop section” or how the “reactive circuit element and [the] loop section of [a] transmission means are configured to operate as a trap for received signals having frequencies within a first frequency band.” Accordingly, for reasons similar to the rejection of independent Claim 1, Applicant respectfully believes that the §

102(b) rejection of independent Claim 16, as allegedly being anticipated by Judd, cannot be properly maintained. Applicant requests, therefore, the rejection of independent Claim 16 also be withdrawn.

Claims 2-9, 11-13, 17-25 and 27-29 were also rejected for allegedly being anticipated by Judd. However, since these claims all depend from either independent Claim 1 or independent Claim 16, which are not anticipated by Judd for at least the reasons set forth above, they too should be in a condition for allowance as depending from allowable base claims. Dependent Claims 2-9, 11-13, 17-25 and 27-29 are also distinguishable from Judd for at least the following reasons.

Claim 2 recited how the “dipole” of the “multi-band antenna system of Claim 1” is “configured to receive signals having frequencies within a second frequency band.” Despite what is asserted in the Office Action, Judd does not teach how its dipole antennas may be configured to receive signals within a second frequency band. Judd does describe how the transmit (Tx) antennas 82, 86 and receive antennas 84, 88 on the antenna faces may have different transmit and different receive bands. However, there is no teaching of a receiving antenna operating in multiple frequency bands.

Claim 3 depends from dependent Claim 2, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 2 are allowable over Judd. Further, Judd fails to disclose a “multi-band antenna system” where the “first frequency band corresponds to the CDMA 0.86 GHz band” and the “second frequency band corresponds to the PCS 1.92 GHz band”, as specifically recited in Claim 3.

Claim 4 recites how a “ground plane of a printed circuit board of the PC Card wireless modem and/or a conductive housing of the PC Card wireless modem functions as a counterpoise for the antenna apparatus. As discussed above, Judd does not disclose a PC Card wireless modem. Not only does it not disclose a PC Card wireless modem, the reference also fails to disclose a “ground plane” and/or “conductive housing” of a PC Card wireless modem, let alone how such structures may be used as a “counterpoise” for claimed “multi-band antenna system”.

Claim 5 depends from dependent Claim 4, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 4 are allowable over Judd. Further, Claim 5 recites how the “combined lengths of a pole of the dipole antenna and a portion of the transmission means operate as a monopole antenna for received signals having frequencies within the first frequency band.” Judd fails to teach this subject matter, and there is no explanation in the Office Action provided to support the rejection of Claim 5.

Claim 6 recites how the “multi-band antenna system of Claim 1” further comprises “a matching circuit coupled between first and second poles of the dipole antenna.” In the Office Action, it is asserted that lines 12-17 of column 3 in Judd teaches such subject matter. Applicant respectfully disagrees. Lines 12-17 of column 3 of Judd describe how a multiplicity of antennas formed on multiple faces of the “book” antenna may be formed and designed for correct amplitude and phase matching, in order to generate the desired elevation beam. There is no description of a “matching circuit coupled between first and second dipoles” of an individual dipole antenna.

Claim 7 depends from dependent Claim 6, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 6 are allowable over Judd. Further, Claim 7 recites how the matching circuit recited in Claim 6 is “configured to operate as a balun”. Judd fails to disclose this subject matter, and there is no explanation in the Office Action provided to support the rejection of Claim 7.

Claim 8 depends from dependent Claim 6, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 6 are allowable over Judd. Claim 8 also recites how the “matching circuit, the dipole, and a portion of the transmission means are formed on a first printed circuit board”. Judd fails to disclose this subject matter, and there is no explanation in the Office Action provided to support the rejection of Claim 8.

Claim 9 recites how the “reactive circuit element” is formed on a printed circuit board.” As explained above, Judd does not teach a “multi-band antenna system” having “a reactive circuit element coupled between a second end of the transmission means and a PC Card wireless modem.” Further, Judd fails to teach how such a “reactive circuit element” is “formed on a printed circuit board”. Despite what is asserted in the Office Action, Judd does not teach subject matter. The referred to column 3, lines 12-17 only describe how the RF switch 110 may be mounted on a printed circuit board. There is absolutely not teaching of a “reactive circuit element” formed on a printed circuit board.

Claim 11 recites how the “multi-band antenna system” claimed in Claim 1 further comprises a “diversity dipole”. Judd does not disclose how any one of its dipole antennas may be configured as a “diversity dipole”. Indeed, FIG. 5 of Judd, which is relied on to

support the rejection of Claim 11, shows that the dipole antennas are all oriented in the same longitudinal direction.

Claim 12 depends from dependent Claim 9, which depends from independent Claim 1. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 1 and 9 are allowable over Judd. Further, Claim 9 recites that the “multi-band antenna system” of Claim 9 further comprises a “diversity dipole”. Judd does not disclose how any one of its dipole antennas may be configured as a “diversity dipole”. Indeed, FIG. 5 of Judd, which is relied on to support the rejection of Claim 12, shows that the dipole antennas are all oriented in the same longitudinal direction.

Claim 13 depends from dependent Claim 12, which depends from dependent Claim 9, which depends from independent Claim 1. Accordingly, dependent Claim 13 is believed allowable for the reasons expressed above as to why Claims 1, 9 and 12 are allowable over Judd. Further, Claim 13 recites how the “multi-band antenna system” of Claim 12 is “formed on [a] printed circuit board”. To support the rejection of Claim 13, in the Office Action it is asserted that FIG. 5 of Judd shows how a diversity dipole is formed on a printed circuit board. Applicant respectfully disagrees. FIG. 5 does not show a “diversity dipole”, let alone a “diversity dipole formed on [a] printed circuit board.

Claim 17 recites how the “combined lengths of a pole of the dipole antenna, and a portion of the transmission means form a whip antenna capable of receiving signals having frequencies within [a] first frequency band.” In the Office Action it is asserted that Judd discloses such subject matter. Applicant respectfully disagrees. Not only does Judd fail to disclose how its dipole antennas may be configured to receive signals in

multiple bands (as asserted in the rejection), Judd also fails to describe how “combined lengths of a pole of [a] dipole antenna, and a portion of the transmission means form a whip antenna.” Further, there is nothing in the Office Action explaining how Judd teaches such subject matter.

Claim 18 recites how the “dipole” of the “multi-band antenna system of Claim 16” is “configured to receive signals having frequencies within a second frequency band.” Despite what is asserted in the Office Action, Judd does not teach how its dipole antennas may be configured to receive signals within a second frequency band. Judd does describe how the transmit (Tx) antennas 82, 86 and receive antennas 84, 88 on the antenna faces may have different transmit and different receive bands. However, there is no teaching of a receiving antenna operating in multiple frequency bands.

Claim 19 depends from dependent Claim 18, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 18 are allowable over Judd. Further, Judd fails to disclose a “multi-band antenna system” where the “first frequency band corresponds to the CDMA 0.86 GHz band” and the “second frequency band corresponds to the PCS 1.92 GHz band”, as specifically recited in Claim 19.

Claim 20 recites how the “portable communications device” claimed in Claim 16 “comprises a PC Card wireless modem.” In the Office Action it is asserted that lines 24-30 of column 4 in Judd discloses such subject matter. Applicant respectfully disagrees. Lines 24-30 of column 4 of Judd describe how an Ethernet or USB (Universal Serial Bus) cable 120 may be run down a wall corner to a PC 98, or LAN network server. There is absolutely no discussion of a “PC Card wireless modem” in the referred to excerpt of

Judd. Applicant reminds the Examiner that the “modem 96” described earlier in Judd is not a PC Card wireless modem nor is it even equivalent, whether in structure or operation, to a PC Card wireless modem. Further, the connection made to the PC 98 in Judd is by way of wired Ethernet or USB connection. It is not wireless, and the antenna L-shaped antenna structure is incapable of being plugged into a PCMCIA slot of a PC or other computing device, as does a PC Card wireless modem.

Claim 21 depends from dependent Claim 20, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 20 are allowable over Judd. Further, Claim 21 recites how a “ground plane of a printed circuit board of the PC Card wireless modem and/or a conductive housing of the PC Card wireless modem functions as a counterpoise for the antenna apparatus.” As described above, Judd does not disclose a PC Card wireless modem. Not only does Judd not disclose a PC Card wireless modem, Judd also fails to disclose a “ground plane” and/or “conductive housing” of a PC Card wireless modem, let alone how such structures may be used as a “counterpoise” for claimed “multi-band antenna system”.

Claim 22 recites how the “multi-band antenna system of Claim 16” further comprises “a matching circuit coupled between first and second poles of the dipole antenna.” In the Office Action, it is asserted that lines 12-17 of column 3 in Judd teaches such subject matter. Applicant respectfully disagrees. Lines 12-17 of column 3 of Judd describe how a multiplicity of antennas formed on multiple faces of the “book” antenna may be formed and designed for correct amplitude and phase matching, in order to

generate the desired elevation beam. There is no description of a “matching circuit coupled between first and second dipoles” of an individual dipole antenna in Judd.

Claim 23 depends from dependent Claim 22, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 22 are allowable over Judd. Further, Claim 23 recites how the matching circuit recited in Claim 22 is “configured to operate as a balun”. Judd fails to disclose this subject matter, and there is no explanation in the Office Action provided to support the rejection of Claim 23.

Claim 24 depends from dependent Claim 22, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 22 are allowable over Judd. Claim 24 also recites how the “matching circuit, the dipole, and a portion of the transmission means are formed on a first printed circuit board”. Judd fails to disclose this subject matter, and there is no explanation in the Office Action provided to support the rejection of Claim 24.

Claim 25 recites how the “reactive circuit element” is formed on a printed circuit board.” As explained above, Judd does not teach a “multi-band antenna system” having “a reactive circuit element coupled between a second end of the transmission means and a PC Card wireless modem.” Further, Judd fails to teach how such a “reactive circuit element” is “formed on a printed circuit board”. Despite what is asserted in the Office Action, Judd does not teach subject matter. The referred to column 3, lines 12-17 only describe how the RF switch 110 may be mounted on a printed circuit board. There is absolutely not teaching of a “reactive circuit element” formed on a printed circuit board.

Claim 27 recites that the “multi-band antenna system” of Claim 16 further comprises a “diversity dipole”. Judd does not disclose how any one of its dipole antennas may be configured as a “diversity dipole”. Indeed, FIG. 5 of Judd, which is relied on to support the rejection of Claim 27, shows that the dipole antennas are all oriented in the same longitudinal direction.

Claim 28 depends from dependent Claim 25, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16 and 25 are allowable over Judd. Further, Claim 28 recites that the “multi-band antenna structure” claimed in Claims 25 and 16 further comprises a “diversity dipole”. Judd does not disclose how any one of its dipole antennas may be configured as a “diversity dipole”. Indeed, FIG. 5 of Judd, which is relied on to support the rejection of Claim 27, shows that the dipole antennas are all oriented in the same longitudinal direction.

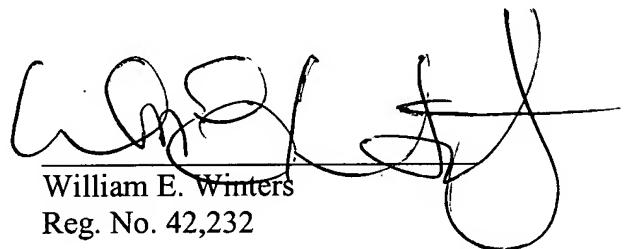
Claim 29 depends from dependent Claim 28, which depends from dependent Claim 25, which depends from independent Claim 16. Accordingly, it is believed allowable for the reasons expressed above as to why Claims 16, 25 and 28 are allowable over Judd. Further, Claim 29 recites how the “multi-band antenna system” of Claim 28 is “formed on [a] printed circuit board”. To support the rejection of Claim 29, in the Office Action it is asserted that FIG. 5 of Judd shows how a diversity dipole is formed on a printed circuit board. Applicant respectfully disagrees. FIG. 5 does not show a “diversity dipole”, let alone a “diversity dipole formed on [a] printed circuit board.”

CONCLUSION

For at least the foregoing reasons, Applicant believes all claims now pending in this Application are in condition for allowance. The issuance of a formal Notice of Allowance at an early date is respectfully requested.

If the Examiner has any further questions or comments concerning the amendments made herein, he is encouraged to telephone the undersigned at 408-282-1857.

Respectfully submitted,



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